TMDL Implementation Projects
SWM Retrofits and Enhancement

INFORMATIONAL MEETING

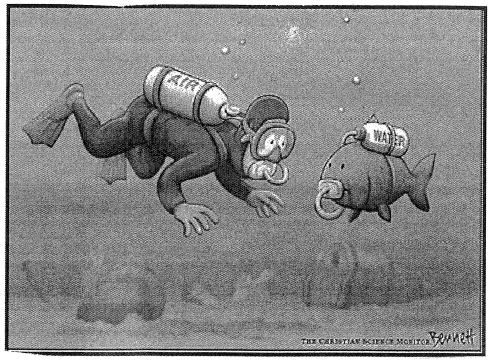
June 26, 2012

NPDES MS4 Permit and TMDL

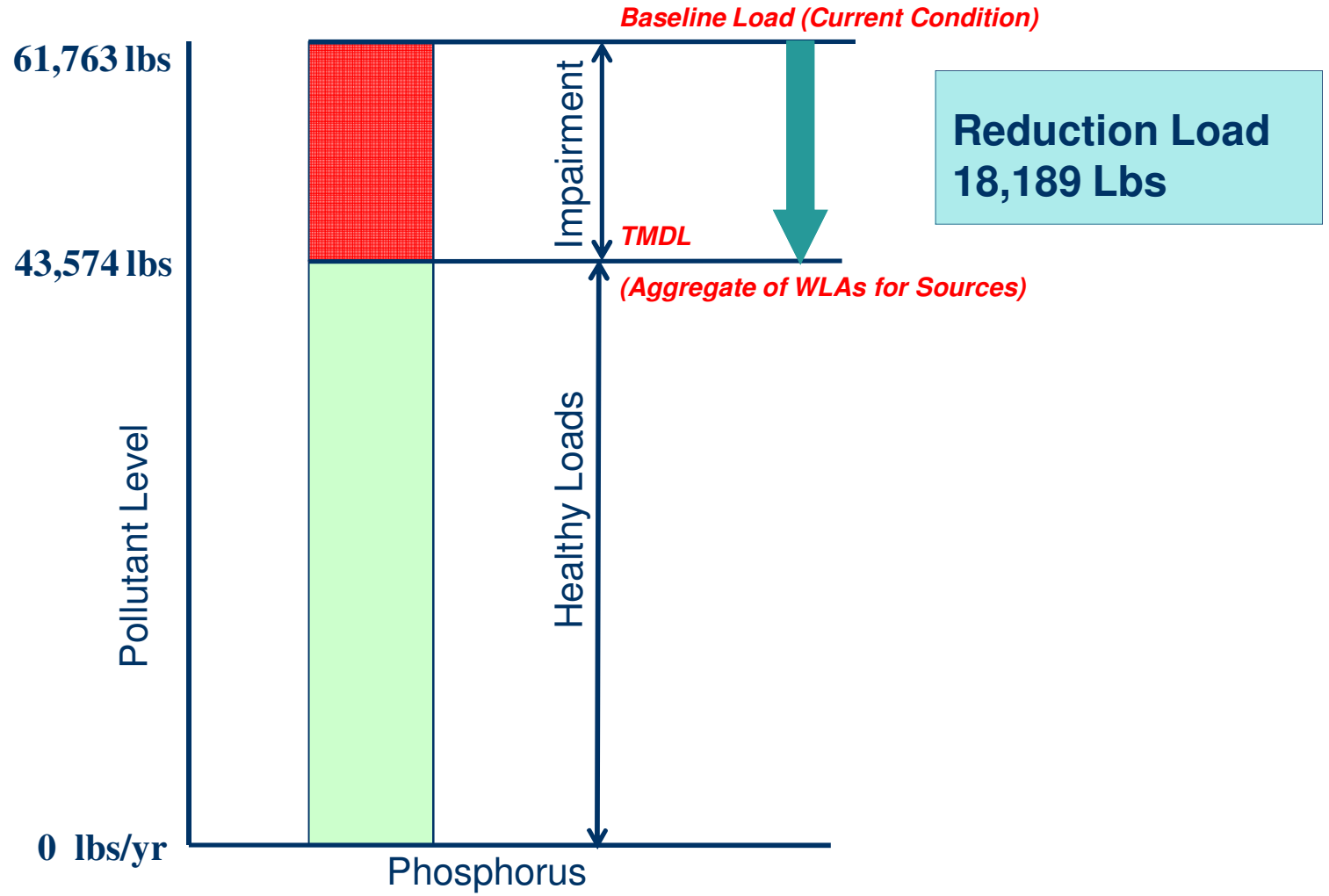
TMDL stands for **T**otal **M**aximum **D**aily **L**oad

…and it is

…the maximum level of a pollutant that can be discharged to a water body without causing it to exceed **<u>water quality standards</u>**



TMDL Illustrated



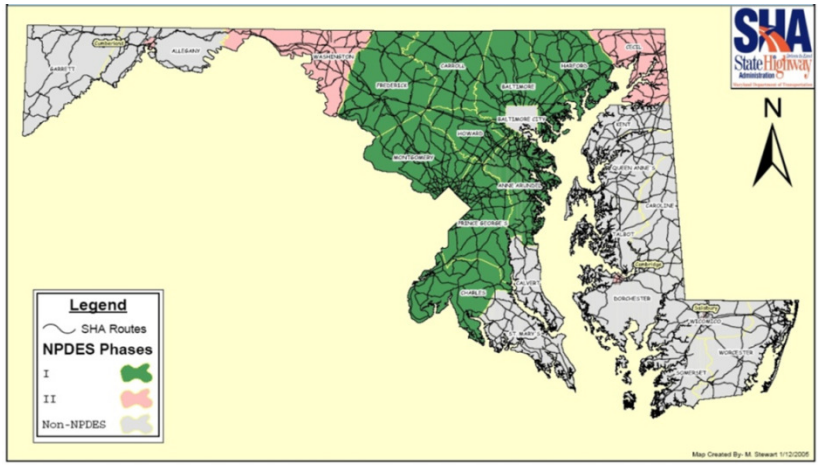
SHA WIP II Requirements and Cost

Description	2017 Target WIP II	2025 Target WIP III
20% Impervious Cover Treatment (in acres)	5,133	TBD
N-EOS Reduction (lbs/year)	90,485	150,808
P-EOS Reduction (lbs/year	10,555	17,592
TSS-EOS Reduction (lbs/year)	5,268,036	8,780,060

Estimated Engineering and Construction Cost – Approx. $700M
Estimate for R/W purchase exceeds construction cost, a big unknown
Hold for R/W and Utilities –Approx. $ 300M
Total cost (2025 if the loads do not change in phase III) > $1B
2010 Level funding $0
Current level of funding $80M

Drivers for SHA to meet Bay TMDL

- Restore **30%** of Pre-1985 Impervious Surfaces in Phase I Areas by 2017
- Restore **20%** of Pre-1985 Impervious Surfaces in Phase II Areas by 2017



SHA WIP II Approach

Implementation Strategies

Structural Best Management Practices

- New Stormwater Management Facilities – ESD, others per MDE Manual
- Upgrade and retrofit existing Stormwater Facilities
- Stabilize eroding outfalls and channels
- Upgrade existing swales - non-structural water quality practices

Alternative Restoration Practices

- Reforestation and tree planting
- Stream and riparian buffer planting
- Stream restoration/stabilization
- Forest Conservation
- Street sweeping/inlet cleaning
- Pavement Removal
- Shoreline Stabilization

SHA Approach – Projected Targets

BMP	2017 Target	2025 Target
Tree Planting (AC)	2,612	5,657
Outfall Stabilization (DA AC)	1,625	6,841
Stream Restoration (LF)	44,468	74,468
Bioswales (DA AC)	434	1,257
MS4 SW Retrofits (DA AC)	**977**	**1,753**
Urban Filtering (DA AC)	435	606
Urban Infiltration (DA AC)	419	734
Wet Ponds & Wetlands (DA AC)	1,463	1,463
Forest Conservation (AC)	50	50
Inlet Cleaning (Lbs. Annually)	7,073,080	7,073,080
Others (DA AC)	7,222	7,222

SHA Bay TMDL Watershed Implementation Plan II (WIP II)

- 2011 Milestone (July 2009 to June 2011 plus BMPs missing from the Bay Model

- Milestone (July 2011 to June 2013)-10% Implementation
  - Bioswales……..292 Drainage Area AC Restored
  - MS4 SW Retrofits…… 273 Drainage Area AC Restored
  - Urban Stream Restoration..14,000 LF of Stream Restored
  - Urban Tree Planting…….724 Acres Planted
  - Wet Ponds & Wetlands……12.3 Drainage Area AC Restored

- 2017 Milestone (July 2013 to June 2017) -60% Implementation

- 2025 Milestone (July 2017 to June 2025) -100% Implementation

SWM Retrofits – Increase Pollutant Removal Efficiency

BMP	N	P	TSS
Detention	5%	10%	10%
Extended Detention	20%	20%	60%
Retention	20%	45%	60%
Veg. Open Channels	45%	45%	70%
Filtering Practices	40%	60%	80%
Infiltration	80%	85%	95%

SWM Retrofits -AA County
11 BMP Sites

Current Treatment level (Total DA = 124 AC)

N = 64 lb/yr
P = 17 lb/yr
TSS = 4 tons/yr

Anticipated Treatment level:

N = 256 to 1023 lb/yr
P = 35 to 147 lb/yr
TSS = 22 to 34 tons/yr

SWM Retrofits –District 3
18 BMP Sites

Current Treatment Level (Total DA 222 AC)

N = 114lb
P = 31 lb
TSS = 6 tons

Anticipated Treatment Level:

N = 457 to 1830 lb
P = 62 to 263 lb
TSS = 39 to 61 tons

Questions?

Before

After retrofit